



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/562,050	12/23/2005	Lachezar Komitov	003301-249	4262
21839 7590 12/24/2008 BUCHANAN, INGERSOLL & ROONEY PC POST OFFICE BOX 1404 ALEXANDRIA, VA 22313-1404				
EXAMINER				
HON, SOW FUN				
ART UNIT		PAPER NUMBER		
1794				
NOTIFICATION DATE		DELIVERY MODE		
12/24/2008		ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ADIPFDD@bipc.com

ADVISORY ACTION

Declaration under 37 C.F.R. 1.131

1. The declaration under 37 C.F.R. 1.131 has not been entered because it is not directed solely to issues which were newly raised by the examiner in the final rejection and Applicant has not presented good and sufficient reasons as to why it was not earlier presented.

Request for Reconsideration

2. Applicant's arguments have been fully considered but they are not persuasive for the reasons set forth below.

3. Applicant argues that the electrodes of the system disclosed by Miyachi are arranged such that the electric field crosses the first and second switching layers and the liquid crystal cell, and that as a result, the molecules in the switching layers twist around the field lines of the electric field, which is only possible in situations where ferroelectric coupling, ferrielectric coupling or antiferroelectric coupling is the mechanism of operation, and is not possible where dielectric coupling is the mechanism of operation.

Applicant is respectfully requested to resubmit the statements in an affidavit with clear comparative data. The arguments of counsel cannot take the place of evidence in the record when they pertain to the inoperability of the prior art system. See MPEP 716.01. In the instant case, Applicant's recitation of "wherein the orientation of the molecules of the liquid crystal bulk layer and the orientation of said side-chains of the

surface-director alignment layer each is directly controllable by an electric field via dielectric coupling" is met by Miyachi. Miyachi teaches that both the surface-director alignment layer and the underlying layer preferably include a functional group with a great dipole moment which orientation is easily realized by the interaction between the dipoles (column 11, lines 50-59). The interaction between dipoles is dielectric coupling. Thus both the orientation of the molecules of the liquid crystal bulk layer and the orientation of said side-chains of the surface-director alignment layer each is directly controllable by an electric field via dielectric coupling.

It is noted that Applicant's present claims do not preclude the instances where both the orientation of the molecules of the liquid crystal bulk layer and the orientation of said side-chains of the surface-director alignment layer each is directly controllable by an electric field via ferroelectric coupling, ferrielectric coupling or antiferroelectric coupling, instead of just the specific type of dielectric coupling as defined by Applicant. Furthermore, Applicant's present claims do not recite any electrodes, let alone an arrangement that makes a clear distinction between Applicant's device and that of Miyachi. Thus, Applicant's arguments against Miyachi are not commensurate in scope with the present claims.

4. Applicant argues that Miyachi does not disclose dielectric coupling between the switching layers and the applied electric field [since] the behavior of the switching field disclosed in Miyachi is impossible to achieve with dielectric coupling.

Applicant is respectfully requested to resubmit the statements in an affidavit with clear comparative data. The arguments of counsel cannot take the place of evidence in

the record when they pertain to the inoperability of the prior art system. See MPEP 716.01. Furthermore, is noted that Applicant's present claims do not recite any electrodes, let alone an arrangement that makes a clear distinction between Applicant's device and that of Miyachi.

5. Applicant argues that the present application describes dielectric coupling [between the switching layers and the applied electric field] as giving rise to an electro-optic response that is quadratic with the applied field that is independent of field polarity, and that as a result, dielectric coupling can only be used to control the relationship between the orientation before and after the switching, but not in the direction in which the molecule turns in order to switch from one orientation to another. Applicant argues that by teaching that the molecules in the first and second switching layers turn in mutually opposite directions, Miyachi expressly teaches that the system is incompatible with [the mechanism] of dielectric coupling as defined by Applicant.

Applicant is respectfully apprised that Applicant's present claims do not recite any electrodes, let alone an arrangement that makes a clear distinction between Applicant's device and that of Miyachi, such that it is clearly understood that the only mechanism possible in Applicant's device is an electro-optic response that is quadratic with the applied field that is independent of field polarity, and that this mechanism is the only one that can be used to control the relationship between the orientation before and after the switching, but not in the direction in which the molecule turns in order to switch from one orientation to another. Furthermore, Applicant is respectfully requested to resubmit the statements in an affidavit with clear comparative data. The arguments of

counsel cannot take the place of evidence in the record when they pertain to the inoperability of the prior art system. See MPEP 716.01.

6. Applicant argues that the Office's contention that this opposite direction of switching indicates that the first and second switching layers of Miyachi are of opposite dielectric anisotropy are erroneous. Applicant argues that the functioning of the switching layers [of Miyachi] is due to ferro-, ferri-, or antiferroelectric coupling, which is due to chirality in the liquid crystal phase of the liquid crystal layer, and is completely independent of the sign of the dielectric anisotropy of the molecules.

Applicant is respectfully apprised that the reasoning behind the prior art rejection is that since the molecule in the one switching layer and the molecule in the other switching layer have mutually opposite spontaneous polarizations towards an applied voltage with a polarity (column 8, lines 54-57) that the two molecules, and hence the two switching layers, must exhibit mutually opposite signs of dielectric anisotropy. Otherwise, the spontaneous polarizations towards the applied voltage with polarity would not have been mutually opposite, as in positive and negative, in that one embodiment. It follows that since there are only two signs of dielectric anisotropy, positive and negative, and since Miyachi teaches that the liquid crystal bulk layer has positive dielectric anisotropy in one embodiment (column 14, lines 12-20) and negative dielectric anisotropy in an alternate embodiment (column 14, lines 30-35), that the liquid crystal bulk layer would exhibit the same sign of dielectric anisotropy with one switching layer and the opposite sign of dielectric anisotropy with the other switching layer of

mutually opposite sign of spontaneous polarization and hence dielectric anisotropy to the first switching layer.

7. Applicant's arguments directed against Robinson are directed against the validity of Miyachi, which are addressed above.

Any inquiry concerning this communication should be directed to Sow-Fun Hon whose telephone number is (571)272-1492. The examiner can normally be reached Monday to Friday from 10:00 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Keith Hendricks, can be reached on (571)272-1401. The fax phone number for the organization where this application or proceeding is assigned is (571)273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Sophie Hon/
Examiner, Art Unit 1794

/KEITH D. HENDRICKS/
Supervisory Patent Examiner, Art Unit 1794